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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/716,269 | 11/17/2003 | Damion T. Searls | 884.242US2 | 6473 |
| 7590 08/11/2004 | | | EXAMINER | |
| Schwegman, Lundberg, Woessner & Kluth, P.A. | | | DUONG, THO V | |
| P.O. Box 2938 | | | ART UNIT | |
| Minneapolis, MN 55402 | | | PAPER NUMBER | |
| | | | 3743 | |

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,269

Applicant(s)

SEARLS ET AL.

Examiner

Tho v Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 6-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/17/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claims 6-16 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim. Election of group I was made **without** traverse in the reply filed on 5/13/2004.

Specification

The abstract of the disclosure is objected to because this application claims a method for making a passive phase change material heat sink. The applicant should re-write the abstract because the abstract should reflect only the invention claimed in this divisional application. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: In the cross-reference section of the divisional application, the patent number of 6,672,370 should replace the filing number since this application has been granted to be a patent.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Method for making a passive phase change material heat sink.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "the heat sink" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 is further rejected as can be best understood by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 4-5 rejected under 35 U.S.C. 102(b) as being anticipated by Baer (US 5,070,933). Baer discloses (figures 1 and 4) a method comprising forming a conductive structure (3) having a cavity having a plurality of ram structures (11,25) formed on the cavity surface; injecting a phase change material (5) into the cavity; injecting a plurality of solid spheres (7) into the cavity through an injection hole (9) in the heat sink; and sealing the cavity at the port (9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Van Iperen et al. (US 4,923,077). Van Iperen discloses (figure 1-3 and column 9, lines 35-69) a method comprising forming a conductive structure (11) having a cavity including a cavity surface having a plurality of ram structure formed on the cavity surface; a phase change material of hydrate salt and silicon dioxide particles are injected into the cavity through injection hole (27) and the cavity was sealed by cap (28). Van Iperen further discloses that the silicon dioxide particle has a trade name of Cab-O-Sil, by Cabot Corporation, which has a solid spherical shape. Applicant is advised to see Salyer (US 5,254,380, column 3, lines 43-60) for the characteristic of the Cab-O-Sil. Furthermore, applicant discloses in the specification that on page 7, lines 16-19, that hydrate salt is considered as TH58 material and suitable material for the invention. Therefore, the hydrate salt as disclosed by the prior art is considered to read as a TH58 material.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hanrahan (US 5,945,217) discloses a thermal conductive material that has a phase change material mixed with spherical shape particles.

Wyatt (US 4,982,722) discloses a heat retentive server with phase change core.

Chase (US 4,544,028) discloses a heat accumulator that has a plurality of sphere located in side a container.

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Schoenfelder (US 4,223,721) discloses a heat storage container filled with the combination of salt and filler material.

Prusinski et al. (US 4,178,727) discloses a heat-absorbing panel.

Moses et al. (US 4,579,170) discloses a container for thermal energy storage material.

Sabin et al. (US 5,984,953) discloses a self-regulating heat pack.

Benjamin et al. (US 5,827,390) discloses a method of injecting a phase change material into a cavity.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tho Duong whose telephone number is (703) 305-0768. The examiner can normally be reached on from 9:30-6 PM.

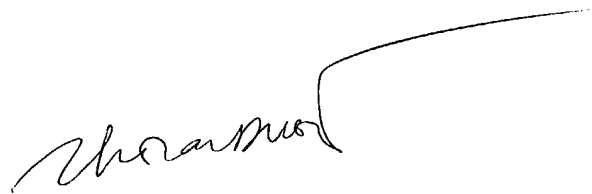
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet, can be reached on (703) 308-0101. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.



TD

August 8, 2004



Tho Duong

Patent Examiner.